



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/333,049	06/15/99	HIRANO	H 0819-255

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EXAMINER

PHAM, H

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 07/24/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Applicati n No.

09/333,049

Applicant(s)

HIRANO ET AL.

Examiner

Hoai V Pham

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations in claims 8-10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Specification

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR 1.71(a)-(c):

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

(c) In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

The specification is objected to under 37 CFR 1.71 because the specification fails to provide an adequate written description the limitations in claims 8-10.

Claim Objections

3. Claim 6 is objected to because of the following informalities:

In line 7, change "a bit line" to --the bit line--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Chinu et al. [JP. 11121705 A] (applicant IDS).

Chinu et al. (figures 6-7) discloses a ferroelectric memory device comprising:

a ferroelectric capacitor including a top electrode (67a), a bottom electrode (63a) and a ferroelectric film (65a) interposed between the top and bottom electrodes, the top electrode having a rectangular planar pattern;

a memory cell transistor including first and second doped layer (57a, 57b) and a gate (55), the memory cell transistor controlling a voltage supplied to the top electrode of the ferroelectric capacitor;

an interlevel dielectric film (71) formed over the memory cell transistor and the ferroelectric capacitor; and

a first interconnection layer (73) formed on the interlevel dielectric film, wherein, in a planar layout of the ferroelectric memory device, the first interconnection layer (73) partially overlaps with the top electrode of the ferroelectric capacitor, and does not cover at least one side of the rectangular top electrode, and the width of a bit line formed above the top electrode is smaller than the distance between the top electrode and another top electrode adjacent to the top electrode.

With respect to claims 2 and 6, Chinu et al. discloses a storage line (73) connected to the top electrode of the ferroelectric capacitor and to the first doped layer (57a) of the memory cell transistor, the storage line having a linear planar pattern; and the bit line connected to the second doped layer of the memory cell transistor, and wherein the storage line intersects only one side of the top electrode in the planar layout.

With respect to claims 3 and 5, Chinu et al. discloses a first region connected to the top electrode of the ferroelectric capacitor; a second region connected to the first doped layer (57a) of the memory cell transistor; and a third region being interposed between the first and second regions and intersecting the side of the top electrode in the planar layout, and wherein the line width of the third region is smaller than that of the first and second regions.

With respect to claim 4, Chinu et al. discloses the bit line does not overlap with the top electrode in the planar layout.

Claim Rejections - 35 USC § 103

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chinu et al. [JP. 11121705 A] (applicant IDS).

Chinu et al. does not mention the interconnection layer is containing at least one of aluminum and copper. However, aluminum and copper are well known materials in the art to form the interconnection layer. Therefore, it would have been obvious to the skilled in the art to use aluminum and copper for the interconnection layer in the Chinu et al. device since aluminum and copper are easy to form and better conductivity.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chinu et al. [JP. 11121705 A] (applicant IDS) in view of Hayashi et al. [U.S. Pat. 6,174,766 B1].

Chinu et al. does not disclose the limitations in claims 8-18. However, Hayashi et al. shows that it is well known in the art to have an upper interlevel dielectric film (27)

formed to cover the first interconnection layer (24); and a second interconnection layer (30, aluminum) formed on the upper interlevel dielectric film, wherein the second interconnection layer totally covers the top and bottom electrodes of the ferroelectric capacitor (see figure 13, col.13, lines 44+). Therefore, it would have been obvious to the skilled in the art to include the second interconnection layer in the Hayashi et al. for providing an electrical connection to other circuit.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai V Pham whose telephone number is 703-308-6173. The examiner can normally be reached on 6:30A.M. - 6:00P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HP
Hoai Pham
July 17, 2001


OLIK CHAUDHURI
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